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The Subcommittee reviewed 113 papers nominated by EPA's Office of Research and Development for the 1986 Scientific and Technological Achievement Awards; 34 were recommended for awards. The Subcommittee noted that more papers were nominated for awards this year (113 versus 92 in 1985), but a higher percentage (30% versus 25%) of those nominated have been recommended for an award. Papers in the Control Technology category were judged worthy of an award for the first time in several years.

The Subcommittee made the following three suggestions: (1) the call for papers should be widened so that qualifying work of engineers and scientists throughout the Agency can be considered; (2) a letter of recognition should be sent to scientists and engineers outside the Agency who co-authored award-winning papers; and (3) recognizing in some other way a number of papers which were of very high quality but did not qualify for awards.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SAB-EC-87-026

April 6, 1987

OFFICE OF
THE ADMINISTRATOR

Dr. Vaun Newill
Assistant Administrator
for Research and Development
Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

Dear Dr. Newill:

The Science Advisory Board's 1986 Scientific and Technological Awards (STAA) Subcommittee has completed its review of the 113 papers nominated by the Office of Research and Development for awards. The enclosed memorandum from Kathleen W. Conway lists the Subcommittee's award recommendations and contains the Subcommittee roster.

The Subcommittee is pleased to note that not only were more papers nominated for awards this year (113 versus 92 in 1985), but a higher percentage (30% versus 25%) of those nominated have been recommended for an award. Particularly notable is the fact that papers in the Control Technology category were judged worthy of award for the first time in several years.

The review process generally proceeded smoothly, especially with two members who participated in the selection the year before. However, there were certain measures that could improve the process for subsequent years. In the EPA guidance for our review, there are items concerning both the content of papers and author contributions which we believe could be clarified. These items are discussed below.

Review papers without new interpretation were not given an award this year, following previous SAB practice. However, many review papers serve a major function in synthesizing information and need to be recognized. These are papers describing special projects and the results of interlaboratory or instrument comparisons. These are all key EPA contributions and need to be considered in a category that does not fit in the present framework. Some special projects were judged to be very good but were not recommended for an award because they did not meet the stated STAA criteria. High quality reports of interlaboratory quality control and assurance studies also were not given awards. The Subcommittee hopes that these categories can either be recognized by other award mechanisms, or that the STAA Program could be expanded to include an additional category for such contributions.

Papers which were particularly good but did not meet the STAA criteria are:

TRANSPORT AND FATE

Paper 5: "Highway Motor Vehicles as Sources of Atmospheric Particles: Project Trends 1977 to 2000," Environment International, Vol. 11, pp. 205-233.
Frank Klack, James Braddock, Ronald L. Bradow and Melvin Ingals (ineligible author).

Paper 17: "Interlaboratory Comparison of Receptor Model Results for Houston Aerosol, "Atmospheric Environment, Vol. 18, pp. 1555-1566, 1984.
Thomas G. Dzubay, Robert K. Stevens.

HEALTH EFFECTS

Paper 1: "A Summary of Waterborne Illness Transmitted Through Contaminated Groundwater, "Journal of Environmental Health, Vol. 48, No. 3, pp. 122-127, 1985.
Gunther F. Craun.

Paper 11: "Design of a Limited-Access Facility and Safety Program for a Genetic Toxicology Laboratory", American Industrial Hygiene Association Journal, Vol. 46, No. 6, pp. 303-307, 1985.
Jeff Inmon, Thomas Vaughn, and Jewel Morris.

Paper 27: "Inhalation Studies of Mt. St. Helens Volcanic Ash in Animals: Part I, II, III, and IV," Environmental Research, Vol, 36, pp. 230-240 (Part IV), Vol. 37, pp. 61-69 (Part I, II, and III), 1985.
Judith A. Graham, Fred J. Miller, David Davies, James A. Raub, Gary E. Hatch, Elaine C. Grose, Joseph W. Illing, Mary J. Daniels, MaryJane K. Selgrade, M. Jean Wiester.

(This last paper was judged to be an excellent example of a well organized special project responding to a major environmental disturbance.)

MONITORING AND MEASUREMENT METHODS

Paper 13: "Comparison of an Optical Particle Size Monitor and a Cascade Impactor for In-Stack Source Testing," Environmental Science and Technology, Vol. 19, No. 5, pp. 458-462, 1985.
William D. Conner and Kenneth T. Knapp.

Paper 24: "A Field Comparison of PM_{10} Inlets at Four Locations," Journal of the Air Pollution Control Association, Vol. 35, No. 4, pp. 345-354, April 1985.
Charles I. Rodes, David M. Holland, Larry J. Purdue, and Kenneth A. Rehme.

Paper 30: "Urban Air Pollution Worldwide," Environmental Science and Technology, Vol. 19, No. 4, pp. 298-304, 1985.
Gerald G. Akland.

Paper 34: "Methods for the Quantitative Determination of Multiple, Specific Polychlorinated Debenzo-p-dioxin and Dibenzofuran Isomers in Human Adipose Tissue in the Parts-per-Trillion Range. An Interlaboratory Study," Analytical Chemistry, Vol. 57, pp. 2717-2725, 1985. R. L. Harless, D. S. McDaniel, A. E. Dupuy, Jr.

Paper 40: "Airborne Laser Fluorosensor Survey of the Columbia and Snake Rivers: Simultaneous Measurements of Chlorophyll, Dissolved Organics and Optical Attenuation," International Journal of Remote Sensing, Vol. 6, No. 11, pp. 1707-1734, November 1985. Michael P. Bristow, Donald H. Bundy, Curtis M. Edmonds, Paul E. Ponto.

The Subcommittee had trouble identifying authors' contributions in multi-author multi-institution papers. Therefore, we believe the nomination papers should include an estimate of the person's fractional contribution to the effort, rather than percentage benefit from the award. Furthermore, the nominators should make a special effort to make the authorship role clear to the Subcommittee in the descriptive material for the nomination. If an EPA scientist is not the first author, an explanation should be given as to the investigator's role in the project. The nominator should briefly state why the paper is of importance to EPA.

The Subcommittee would like a statement on the nomination form for proceeding papers and symposium papers as to whether the paper was actually peer-reviewed. The nomination form also needs to clarify the roles of the EPA contractor and the EPA investigator.

The Subcommittee was puzzled in some cases as to whether the work was different work or work submitted previously in a similar paper. The Subcommittee believes that consideration of the same study twice in separate papers is not appropriate.

The STAA Subcommittee needs some guidance on how to treat cumulative work that may be nominated with increasingly definitive papers over a number of years. Very often the development of a concept takes place in such a progression, but there appears no clear way to evaluate this at present.

Guidance should be given to the nominators on combining several papers into a single submission. For example, the papers "Biochemical, Functional and Morphological Indicators of Neurotoxicity: Effect of Acute Administration of Trimethyltin to the Developing Rat" and "Cerebellar Hypoplasia in the Gunn Rat Is Associated with Quantitative Changes in Neurotypic and Gliotypic Proteins," by O'Callaghan and Miller were judged by the Subcommittee together as meriting a level I award, although since they were submitted separately, each was judged a level II. In contrast, other papers were not strengthened by submitting them in combined form.

The Subcommittee believes that this competion should be considered an Agency-wide competition and that the call for papers should be extended to the other program offices and regions of the Agency so that appropriate recognition can be given to exceptionally good science throughout the Agency.

To recognize the contribution of ineligible authors outside the Agency who participated in award winning papers, the Subcommittee recommends the Office of Research and Development send letters of recognition to scientists outside the Agency who co-authored award-winning papers even though a monetary award cannot be given.

Next year it would be helpful for the Subcommittee to have some information, by laboratory or category, on what percentage of peer-reviewed, published papers are nominated for awards. A description of EPA's awards programs and the criteria for the awards would help the Subcommittee place the STAA program in perspective.

It has been a pleasure to participate in this review. The Subcommittee would like to be informed of your decision on the awards when they are given.

Sincerely,

Dr. George M. Hidy
Chairman
1986 Scientific & Technological
Achievement Awards Subcommittee

Dr. Norton Nelson
Chairman
Executive Committee
Science Advisory Board

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D C 20460

MAR - 5 1987

MEMORANDUM

SUBJECT: SAB Review of Papers Nominated for the 1986 Scientific and Technological Achievement Awards

FROM: Kathleen W. Conway
Executive Secretary
Science Advisory Board

THRU: Terry F. Yosie
Director
Science Advisory Board

TO: Vaun Newill
Assistant Administrator
for Research and Development

The Science Advisory Board's 1986 Scientific and Technological Achievement Awards Subcommittee chaired by Dr. George M. Hidy met January 12-13, 1987 and completed its review of the 113 papers transmitted to the Board for its recommendation. The Subcommittee judged the nominations in the light of the Statement of Principles and Processes (Revised 1983) attached to Acting Assistant Administrator Donald Ehreth's memorandum of August 27, 1986 to ORD Office Directors and Laboratory Directors. A copy of this was given to the Board.

A listing of the Subcommittee's recommendations for awards is attached (Attachment I). Briefly, of the 113 papers nominated, 34 are recommended for awards. A table showing the number of recommended awards by category is attached (Attachment II). A Subcommittee Roster is also provided (Attachment III).

The Subcommittee welcomed this opportunity to be of assistance to the Agency and to support your efforts to promote and recognize scientific and technological achievement by Agency employees. The Subcommittee had a number of comments and observations regarding this program which will be transmitted in a letter to you from the Chairman, Dr. Hidy.

Attachments (3)

cc: R. Cortesi
L. Swaby
C. Bishop
T. Yosie
G. Hidy

1986 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS

Awards Recommended by SAB: Level I - None
Awards Recommended by SAB: Level II Awards (10)

CATEGORY	TITLE AND AUTHOR (S)	LABORATORY
CONTROL TECHNOLOGY	"Calcination Kinetics and Surface Area of Dispersed Limestone Particles," AIChE Journal, Vol. 31, No. 1, pp. 103-111, January 1985. Robert H. Borgwardt	Waste Engineering Research Laboratory (Cincinnati)
CONTROL TECHNOLOGY	"Results of the Initial Trial Burn of the EPA-ORD Mobile Incineration System," Proceedings of the 1984 National Waste Processing Conference, The American Society of Mechanical Engineers, New York, pp. 514-534, June 1984. James J. Yezzi, Jr., John E. Brugger, Ira Wilder, Frank J. Freestone, Ineligible Authors: Richard A. Miller, Charles Pfrommer, Jr., and Ralph Lovell	Hazardous Waste Engineering Research Laboratory (Cincinnati)
ECOLOGY	"Evaluation of a System for the Imposition of Plant Water Stress, " Plant Physiology, Vol. 77, pp. 602-607, March 1985. David T. Tingey and Michael E. Snow (ineligible author)	Environmental Research Laboratory (Corvallis)
TRANSPORT AND FATE	"The Pesticide Root Zone Model (PRZM): A Procedure for Evaluation Pesticide Leaching Threats to Groundwater," Ecological Modeling, Vol. 30, pp. 49-69, 1985. Robert F. Carsel, Lee A. Mulkey, Matthew N. Lorber, and Leland B. Baskin	ERL/Athens
TRANSPORT AND FATE	"Photosensitized Transformations Involving Electronic Energy Transfer in Natural Waters: Role of Humic Substances," Environmental Science and Technology, Vol. 19, No. 1, pp. 74-81, 1985. Richard G. Zepp, Patricia F. Schlotzhauer, and R. Merritt Sink	ERL/Athens
HEALTH	"The Effect of Acute Maternal Toxicity on Fetal Development in the Mouse," Teratogenesis, Carcinogenesis, and Mutagenesis, Vol. 5, pp. 3-13, 1985. Robert J. Kavlock, Neil Chernoff [illegible]	HERL/RTP

1986 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS

Awards Recommended by SAB: Level II Awards (10)

(Continued)

CATEGORY	TITLE AND AUTHOR (S)	LABORATORY
HEALTH	"Role of the Parasympathetic Nervous System in Acute Lung Response to Ozone," Journal of Appl. Physiol., Vol. 59, No. 6, pp. 1879-1885, 1985. William F. McDonnell, III, Donald H. Horstman, Dennis E. House, and William S. Beckett (ineligible author)	HERL/RTP
HEALTH	"Biochemical, Functional and Morphological Indicators of Neurotoxicity: Effects of Acute Administration of Trimethyltin to the Developing Rat," Journal of Pharmacology and Experimental Therapeutics, Vol. 231, No. 3, pp. 744-751, 1985. James P. O'Callaghan and Diane B. Miller (ineligible author)*	HERL/RTP
HEALTH	"Cerebellar Hypoplasia in the Gunn Rat is Associated With Quantitative Changes in Neurotypic and Gliotypic Proteins," Journal of Pharmacology and Experimental Therapeutics, Vol. 234, No. 2, pp. 522--533, 1985. James P. O'Callaghan and Diane B. Miller (ineligible author)*	HERL/RTP
MONITORING AND MEASUREMENT METHODS	"Intramolecular Motion and Reorientation Barriers in 9-Fluorenone, 4-Methyl-9-fluorenone and 4,5-Dimethyl-9-fluorenone," Magnetic Resonance Nancy K. Wilson	EMSL/RTP

*The two papers by O'Callaghan and Miller, considered together would, in the Committee's opinion, merit a Level I award.

1986 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS

Awards Recommended by SAB: Level III Awards (24)

CATEGORY	TITLE AND AUTHOR (S)	LABORATORY
CONTROL TECHNOLOGY	"Application of Reburning for NO_x Control to a Firetube Package Boiler," Journal of Engineering for Gas Turbines and Power, Vol. 107, pp. 739-743, July 1985 W.S. Lanier and J. A. Mulholland (ineligible author)	Water Engineering Research Laboratory (Cincinnati)
ECOLOGY	"Prospective Study of Infectious and Noninfections Diseases in Oysters and Fishes in Three Gulf of Mexico Estuaries," Diseases of Aquatic Organisms, Vol. 1, pp. 59-82, December 21, 1985. John A. Couch	ERL/Gulf Breeze
ECOLOGY	"Derivation of Site-Specific Water Quality Criteria for Cadmium and the St. Louis River Basin, Duluth, Minnesota," Environmental Toxicology and Chemistry, Vol. 3, pp. 651-655, 1984. Robert L. Spehar and Anthony R. Carlson	ERL/Duluth
ECOLOGY	"Acute Toxicity of Organic Chemical Mixtures to the Fathead Minnow," Aquatic Toxicology, Vol. 6, pp. 307-322, 1985. Steven J. Broderius and Michael Kahl (ineligible author)	ERL/Duluth
ECOLOGY	"Sediment Toxicity, Contamination, and Macrobenthic Communities Near a Large Sewage Outfall," Validation and Predictability of Laboratory Methods for Assessing the Fate and Effects of Contaminants in Aquatic Ecosystems, ASTM STP 865, T. P. Boyle, Ed., pp. 152-175, 1985. Richard C. Swartz, Donald W. Schults, George R. Ditsworth, Waldemar A. DeBen, Faith A. Cole	ERL/Narragansett i

1986 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS (Con't)

Awards Recommended by SAB: Level III Awards (24)

CATEGORY	TITLE AND AUTHOR (S)	LABORATORY
ECOLOGY	"A Programmable Exposure Control System for Determination of the Effects of Pollutant Exposure Regimes on Plant Growth," Atmospheric Environment, Vol. 19, No. 7, pp. 1135-1145, July 1985. William E. Hogsett, David T. Tingey, and S. R. Holman (ineligible author)	ERL/Corvallis
TRANSPORT AND FATE	"Influence of Microbial Adaptation On the Fate of Organic Pollutants in Ground Water," Environmental Toxicology and Chemistry, Vol. 4, pp. 721-126, 1985. John T. Wilson, James F. McNabb, Ineligible Authors: Jack W. Cochran, T. Helen Wang, Mason B. Tomson, and Phillip B. Bedient	RSK/ERL
TRANSPORT AND FATE	"Manganese (II) Catalyzed Sulfur Dioxide Oxidation in Aqueous Solutions at Environment Concentrations" Atmospheric Environment, Vol, 18, No. 1. pp. 145-151, 1984. H. M. Barnes and T. Ibusuki (ineligible author)	Atmospheric Sciences Research Laboratory/RTP
TRANSPORT AND FATE	"Impact of Tubificid Oligochaetes on Pollutant Transport in Bottom Sediments," Environmental Science and Technology, Vol. 19, No. 1, pp. 51-56, January 1985. Samuel W. Karickhoff and Kenneth R. Morris	ERL/Athens
TRANSPORT AND FATE	"Effects of Sediment Sorption and Abiotic Hydrolyses. 1. Organophosphorothioate Esters," Journal of Agricultural and Food Chemistry, Vol. 33, No. 2, pp. 167-173, 1985. N. Lee Wolfe and Donald L. Macalady (ineligible author)	ERL/Athens

1986 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS (Con't)

Awards Recommended by SAB: Level III Awards (24)

CATEGORY	TITLE AND AUTHOR (S)	LABORATORY
HEALTH	"Use of Immunofluorescence and Phase-Contrast Microscopy for Detection and Identification of Giardia Cysts in Water Samples," Applied and Environmental Microbiology, Vol. 50, No. 6, pp. 1434-1438, December 1985. Judty F. Sauch	HERL/Cincinnati
HEALTH	"Metabolism of 1-Nitro[^{14}C]pyrene In Vivo in the Rat and Mutagenicity of Urinary Metabolites," Carcinogenesis, Vol. 5, No. 12, pp. 1557-1564, 1984. Michael J. Kohan, Jeff P. Inmon, L. D. Claxton, Joellen Lewtas, and L. M. Ball (ineligible author)	HERL/RTP
HEALTH	"Use of a Human X Mouse Hybrid Cell Line to Detect Aneuploidy Induced by Environmental Chemicals," Mutation Research, Vol. 149, pp. 73-81, 1985. Shahbeg S. Sandhu and Raghbir S. Athwal (inelgible author)	HERL/RTP
HEALTH	"Monoclonal Antibodies Identify Conserved Epitopes on the Polyhedrin of Heliothis zea Nuclear Polyhedrosis Virus," Virology, Vol. 143, pp. 380-391, 1985. C. Y. Kawanishi Ineligible authors: Y. S. Huang and P. C. Hu	HERL/RTP
HEALTH	"Reproducibility of Individual Responses to Ozone Exposure," American Review of Respiratory Disease, Vol. 131, No. 1, pp. 36-40, 1985. William F. McDonnell, III, Donald H. Horstman, Sa'id Abdul-Salaam, and Dennis E. House	HERL/RTP
HEALTH	"A Computer-Assisted Elecrocardiographic Analysis System: Methodology and Potential Application to Cardiovascular Toxicology," Journal of Toxicology and Environmental Health, Vol. 15, pp. 713-727, 1985. William P. Watkinson, M. Ann Brice, and Kathy S. Robinson (inelgible author)	HERL/RTP

1986 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS (Con't)

Awards Recommended by SAB: Level III Awards (24)

CATEGORY	TITLE AND AUTHOR (S)	LABORATORY
MONITORING AND MEASUREMENT METHODS	"Gas Chromatography/Mass Spectroscopy Analysis of Mutagenic Extracts of Aqueous Chlorinated Humic Acid. A Comparison of the Byproducts to Drinking Water Contaminants," Environmental Science and Technology, W. Emile Coleman, Jean W. Munch, William H. Kaylor, Robert P. Streicher, H. Paul Ringhand, and John R. Meier	HERL/RTP
MONITORING AND MEASUREMENT METHODS	"Automated Procedures for Mass Spectrometric Determination of Polychlorinated Biphenyls as Isomer Groups," Analytical Chemistry, Vol. 57, No. 13, pp. 2464-2469, November 1985. William L. Budde, Ann L. Alford-Stevens Ineligible Authors: Laurence E. Slivon, Judity E. Gebhart, and Timothy L. Hayes	EMSL/Cincinnati
MONITORING AND MEASUREMENT METHODS	"Absorption Dynamics of Organic Chemical Transport Across Trout Gills As Related to Octanol-Water Partition Coefficient," Toxicology and Applied Pharmacology, Vol. 77, pp. 1-10, 1985. James McKim, Patricia Schmieder, and Gilman Veith	ERL/Duluth
MONITORING AND MEASUREMENT METHODS	"A New Fathead Minnow (Pimephales promelas) Subchronic Toxicity Test," Environmental Toxicology and Chemistry, Vol. 4, pp. 711-718, 1985. Teresa J. Norberg-King and Donald I. Mount	ERL/Duluth
MONITORING AND MEASUREMENT METHODS	"Methanol Measurement in Auto Exhaust Using a Gas-Filter Correlation Spectrometer," SAE Technical Paper Series, No. 852137, October 1985. Peter Gabele and Soyoung Cha (ineligible author)	Atmospheric Sciences Research Laboratory/RTP
MONITORING AND MEASUREMENT METHODS	"Determination of Chromium Speciation in Environmental Particles Multitechnique Study of Ferrochrome Smelter Dust," Environmental Science and Technology, Vol. 19, No. 4, pp. 345-352, April 1985. Frank E. Butler, Ineligible Authors: X. B. Cox and Richard W. Linton	EMSL/RTP

1986 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS (Con't)

Awards Recommended by SAB: Level III Awards (24)

CATEGORY	TITLE AND AUTHOR (S)	LABORATORY
MONITORING AND MEASUREMENT METHODS	"Thermally Desorbablel Passive Sampling Device for Volatile Organic Chemicals in Ambient Air," Analytical Chemistry, Vol. 57, pp. 214-219, 1985. Robert G. Lewis, James D. Mulik Inelgible Authors: R. W. Coutant, G. W. Wooten, and C. R. McMillin	EMSL/RTP
MONITORING AND MEASUREMENT METHODS	"FTIR Transmission Spectrometry for the Nondestructive Determination of Ammonium and Sulfate in Ambient Aerosols Collected on Teflon Filters," Atmospheric Environment, Vol. 19, No. 11, pp. 1891-1898, 1985. William A. McClenny Ineligible Authors: J. W. Childers, R. Rohl, and R. A. Palmer	EMSL/RTP

ATTACHMENT II

1986

SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS

SAB AWARD RECOMMENDATIONS

BY CATEGORY AND LEVEL

CATEGORY	TOTAL PAPERS NOMINATED	AWARD LEVEL I	II	III	TOTAL AWARDS
Control Technology	7	0	2	1	3
Ecology	13	0	1	5	6
Transport & Fate	16	0	2	4	6
Health Effects	37	0	4	6	10
Monitoring & Measurements	40	0	1	8	9
TOTAL	113	0	10	24	34

ENVIRONMENTAL PROTECTION AGENCY
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JANUARY, 1987

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Executive Secretary: Mrs. Kathleen Conway, Deputy Director, Environmental Protection Agency, Science Advisory Board, Washington, D.C. 20460

Staff Secretary: Renee' Butler, Environmental Protection Agency, Science Advisory Board, Washington, D.C. 20460